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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/622,614

07/21/2003

Kenichi Watanabe

030877

2630

38834

7590

07/26/2004

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EXAMINER

WILLIAMS, ALEXANDER O

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 07/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/622,614

Applicant(s)

WATANABE, KENICHI

Examiner

Alexander O Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,8,10,12,20,22,24,26,28,31,34 and 37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/5/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Continuation of Disposition of Claims: Claims withdrawn from consideration are 2-7,9,11,13-19,21,23,25,27,29,30,32,33,35,36 and 38-41 .

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Serial Number: 10/622614 Attorney's Docket #: 030877

Filing Date: 7/21/03; claimed foreign priority to 7/31/2002

Applicant: Watanabe

Examiner: Alexander Williams

Applicant's election of Species of figure 4 (claims 1, 8, 10, 12, 20, 22, 24, 26, 28, 31, 34 and 37), filed 5/6/04, has been acknowledged. Claim 1 is found to be generic to these claims.

This application contains claims 2-7, 9, 11, 13-19, 21, 23, 25, 27, 29, 30, 32, 33, 35, 36 and 38-41 drawn to an invention non-elected without traverse.

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;

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- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claim language combination in claims 1, 8, 10, 12, 20, 22, 24, 26, 28, 31, 34 and 37 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the

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changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims 1, 8, 10, 12, 20, 22, 24, 26, 28, 31, 34 and 37 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it is unclear to what shows the completed structure of the elements claimed. Where is this shown in the drawing?

In claim 22, it is unclear and confusing to what is meant and what shows "the first insulating buried in the first insulating film is a conducting layer buried in the substrate."

In claims 34 and 37, the use of "or" recite alternative structures.

Any of claims 1, 8, 10, 12, 20, 22, 24, 26, 28, 31, 34 and 37 not specifically addressed above are rejected as being dependent on one or more of the claims which have been specifically objected to above.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 8, 10, 12, 20, 22, 24, 26, 28, 31, 34 and 37, **insofar as they can be understood**, are rejected under 35 U.S.C. § 102(e) as being anticipated by Shigeru et al. (Japan Patent # 2001-351920).

1. In claim 1, Shigeru et al. (figures 1 to 134) specifically figure 1 show a semiconductor device comprising: a first insulating film **11** formed over a substrate **1**; a first interconnection **16** buried in at least a surface side of the first insulating film; a second insulating film **15** formed on the first insulating film with the first interconnection buried in, and including a groove-shaped via hole **17** having a pattern which is bent at a right angle (see 1a) formed in a region above the first interconnection and a first buried conductor filled in the groove-shaped via-hole.

8. Shigeru et al. further comprising: a second buried conductor **101** in a hole-shaped via hole formed in the second insulating film on the first interconnection.

10. Shigeru et al. show wherein a width of the groove-shaped via-shaped is 20-140% of a width of the hole shaped via-hole.

12. Shigeru et al. show a width of the groove-shaped via-hole is not more than a width of the hole-shaped via-hole.

20. Shigeru et al. show a groove-shaped via hole is formed along an extending direction of the first interconnection.

22. Shigeru et al. show wherein the first insulating buried in the first insulating film is a conducting layer buried in the substrate.

24. Shigeru et al. show wherein the first interconnection is formed of a conductor which is mainly formed of copper.

26. Shigeru et al. further comprising: a second interconnection formed on the second insulating film and formed of a conductor which is mainly formed of aluminum.

28. Shigeru et al. show the first interconnection and the second interconnection have the same pattern.

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31. Shigeru et al. show wherein the first buried conductor and the second buried conductor are formed of a conductor mainly formed of tungsten.

34. Shigeru et al. show wherein the second insulating film is a layer film of a silicon nitride film and a silicon oxide film or a layer film of an SiC film and a silicon oxide film.

37. Shigeru et al. show wherein the first insulating film is a layer film of a silicon nitride film and a silicon oxide film or a layer film of an SiC film and a SiOC film.

The listed references are cited as of interest to this application, but not applied at this time.

Field of Search	Date
U.S. Class and subclass: 257/758,776,775,700,701,751,753,774,762,763,765,767 438/629,619,622	7/24/04
Other Documentation: foreign patents and literature in 257/758,776,775,700,701,751,753,774,762,763,765,767 438/629,619,622	7/24/04
Electronic data base(s): U.S. Patents EAST	7/24/04

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander O Williams whose telephone number is (571) 272 1924. The examiner can normally be reached on M-F 6:30-7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272 1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AOW  
7/26/04

A handwritten signature in black ink, appearing to read 'Alexander O. Williams', written in a cursive style.

Primary Patent Examiner  
Alexander O. Williams